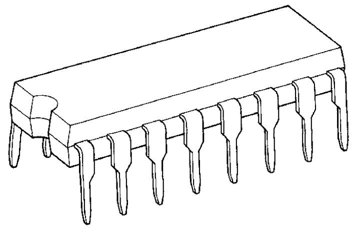
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62064APA

4CH HIGH-CURRENT DARLINGTON SINK DRIVER

The TD62064APA is high-voltage, high-current darlington drivers comprised of four NPN darlington pairs.
All units feature integral clamp diodes for switching inductive loads.
Applications include relay, hammer, lamp and stepping moter drivers.



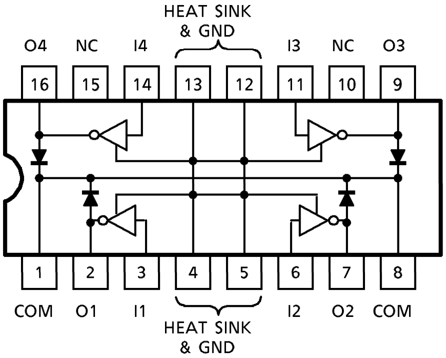
DIP16-P-300-2.54A

Weight : 1.11g (Typ.)

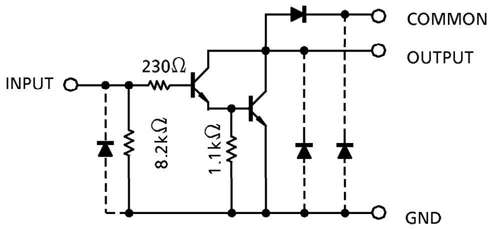
FEATURES

- Output current (single output) 1.5A / ch (Max.)
- High sustaining voltage output 50V (Min.)
- Output clamp diodes
- Input compatible with TTL and 5V CMOS
- GND and SUB Terminal = Heat Sink
- Package type-APA : DIP-16 pin

PIN CONNECTION (TOP VIEW)



SCHEMATICS (EACH DRIVER)



(Note) The input and output parasitic diodes cannot be used as clamp diodes.

961001EBA2

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Output Sustaining Voltage	$V_{CE\,(SUS)}$	−0.5~50	V
Output Current	I_{OUT}	1.5	A / ch
Input Current	I_{IN}	50	mA
Input Voltage	V_{IN}	−0.5~17	V
Clamp Diode Reverse Voltage	V_R	50	V
Clamp Diode Forward Current	I_F	1.50	A / ch
Power Dissipation	P_D	1.47 / 2.7 (Note)	W
Operating Temperature	T_{opr}	−40~85	°C
Storage Temperature	T_{stg}	−55~150	°C

(Note) On Glass Epoxy PCB (50 × 50 × 1.6mm Cu 50%)

RECOMMENDED OPERATING CONDITIONS (Ta = −40~85°C)

CHARACTERISTIC		SYMBOL	CONDITION		MIN.	TYP.	MAX.	UNIT
Output Sustaining Voltage		$V_{CE\,(SUS)}$			0	—	50	V
Output Current		I_{OUT}	DC 1 Circuit, Ta = 25°C		0	—	1250	mA / ch
			$T_{pw} \leqq 25$ms 4 Circuits On Ta = 85°C T_j = 120°C	Duty = 10%	0	—	1250	
				Duty = 50%	0	—	700	
Input Voltage		V_{IN}			0	—	8	V
	Output On	$V_{IN\,(ON)}$	I_{OUT} = 1.25A		2.5	—	8	V
	Output Off	$V_{IN\,(OFF)}$			0	—	0.4	V
Input Current		I_{IN}			0	—	20	mA
Clamp Diode Reverse Voltage		V_R			0	—	50	V
Clamp Diode Forward Current		I_F			—	—	1.25	A
Power Dissipation		P_D	Ta = 85°C (Note)		—	—	1.4	W

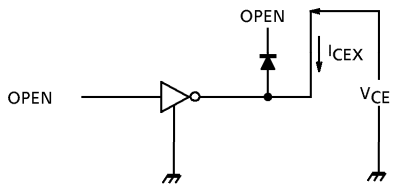
(Note) On Glass Epoxy (50 × 50 × 1.6mm Cu 50%)

ELECTRICAL CHARACTERISTICS ($Ta = 25°C$)

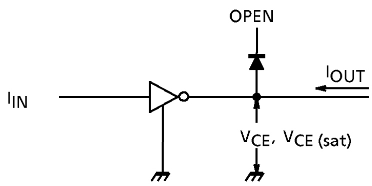
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Output Leakage Current	I_{CEX}	1	$V_{CE} = 50V$, $Ta = 25°C$		—	—	50	μA
			$V_{CE} = 50V$, $Ta = 85°C$		—	—	500	
Collector-Emitter Saturation Voltage	$V_{CE\ (sat)}$	2	$I_{OUT} = 1.25A$, $I_{IN} = 2mA$		—	—	1.6	V
			$I_{OUT} = 0.75A$, $I_{IN} = 935\mu A$		—	—	1.25	
DC Current Transfer Ratio	h_{FE}	2	$V_{CE} = 2V$	$I_{OUT} = 1.0A$	—	800	—	
				$I_{OUT} = 1.25A$	—	1500	—	
Input Voltage (Output On)	$V_{IN\ (ON)}$	3	$I_{OUT} = 1.25A$, $I_{IN} = 2mA$		—	—	2.4	V
Clamp Diode Reverse Current	I_R	4	$V_R = 50V$, $Ta = 25°C$		—	—	50	μA
			$V_R = 50V$, $Ta = 85°C$		—	—	100	
Clamp Diode Forward Voltage	V_F	5	$I_F = 1.25A$		—	—	2	V
Input Capacitance	C_{IN}	6	$V_{IN} = 0V$, $f = 1MHz$		—	15	—	pF
Turn-On Delay	t_{ON}	7	$C_L = 15pF$, $V_{OUT} = 50V$ $R_L = 40\Omega$		—	0.1	—	μs
Turn-Off Delay	t_{OFF}				—	1.0	—	

TEST CIRCUIT

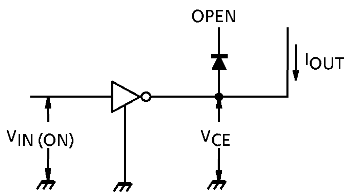
1. I_{CEX}



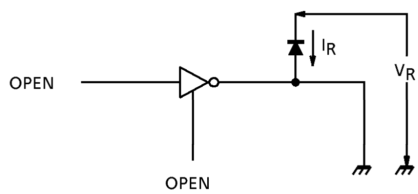
2. $V_{CE\ (sat)}$, h_{FE}



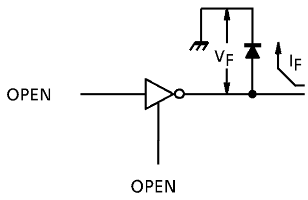
3. $V_{IN\ (ON)}$



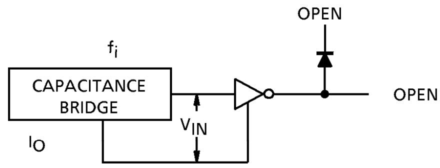
4. I_R



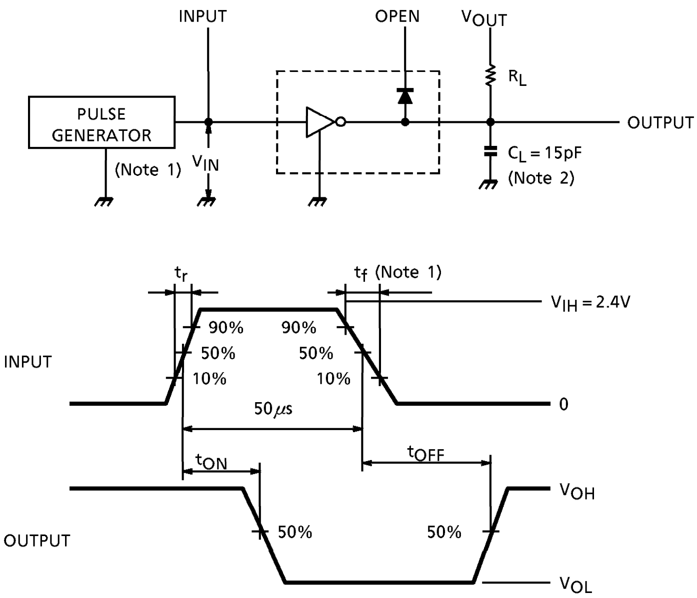
5. V_F



6. C_{IN}



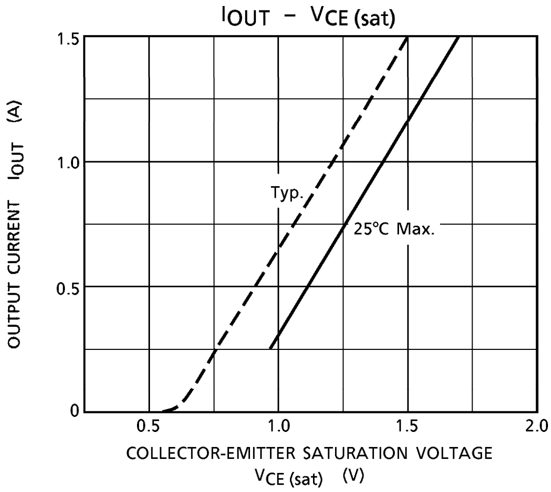
7. t_{ON}, t_{OFF}

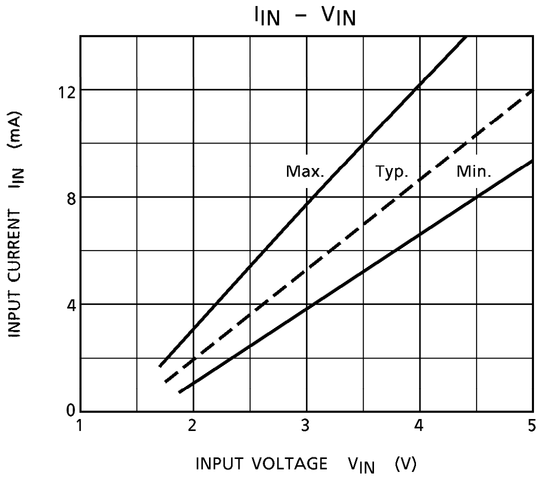


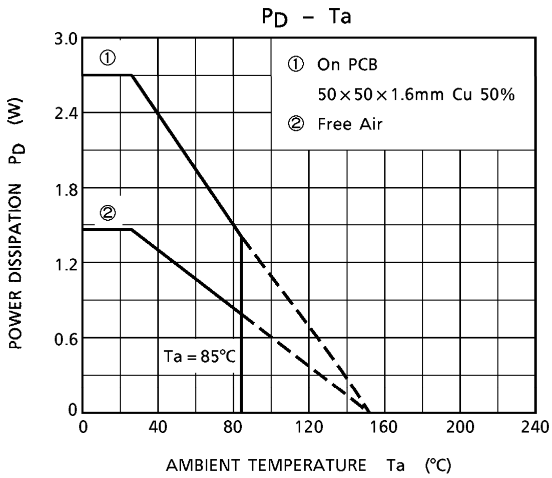
(Note 1) Pulse Width 50μs, Duty Cycle 10%
Output Impedance 50Ω, $t_r \leqq 5ns$, $t_f \leqq 10ns$
(Note 2) C_L includes probe and jig capacitance.

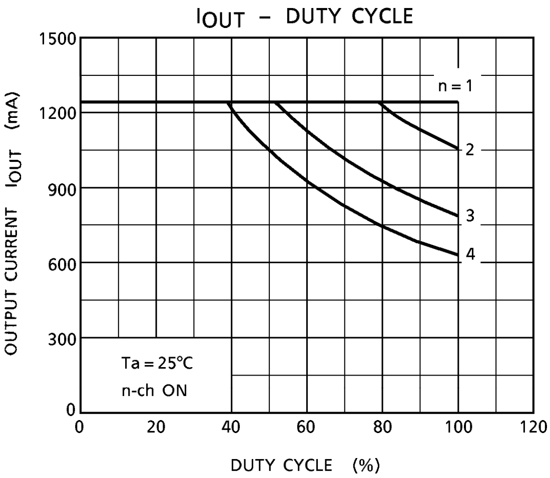
PRECAUTIONS for USING

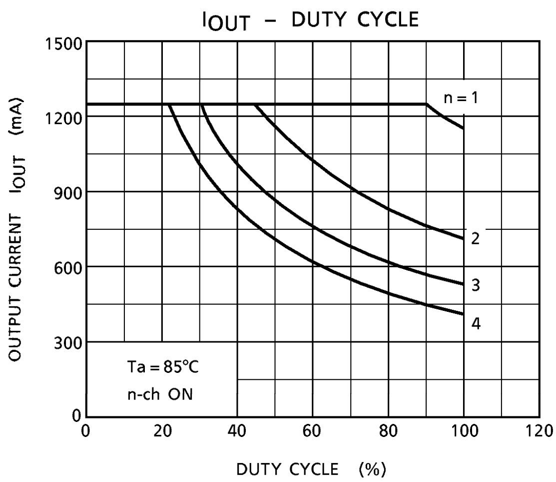
Utmost care is necessary in the design of the output line, COMMON and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.


IOUT – VCE (sat)
OUTPUT CURRENT IOUT (A)
1.5
1.0
0.5
0
0.5
1.0
1.5
2.0
Typ.
25°C Max.
COLLECTOR-EMITTER SATURATION VOLTAGE
VCE (sat) (V)


IIN – VIN
INPUT CURRENT IIN (mA)
12
8
4
0
1
2
3
4
5
Max.
Typ.
Min.
INPUT VOLTAGE VIN (V)

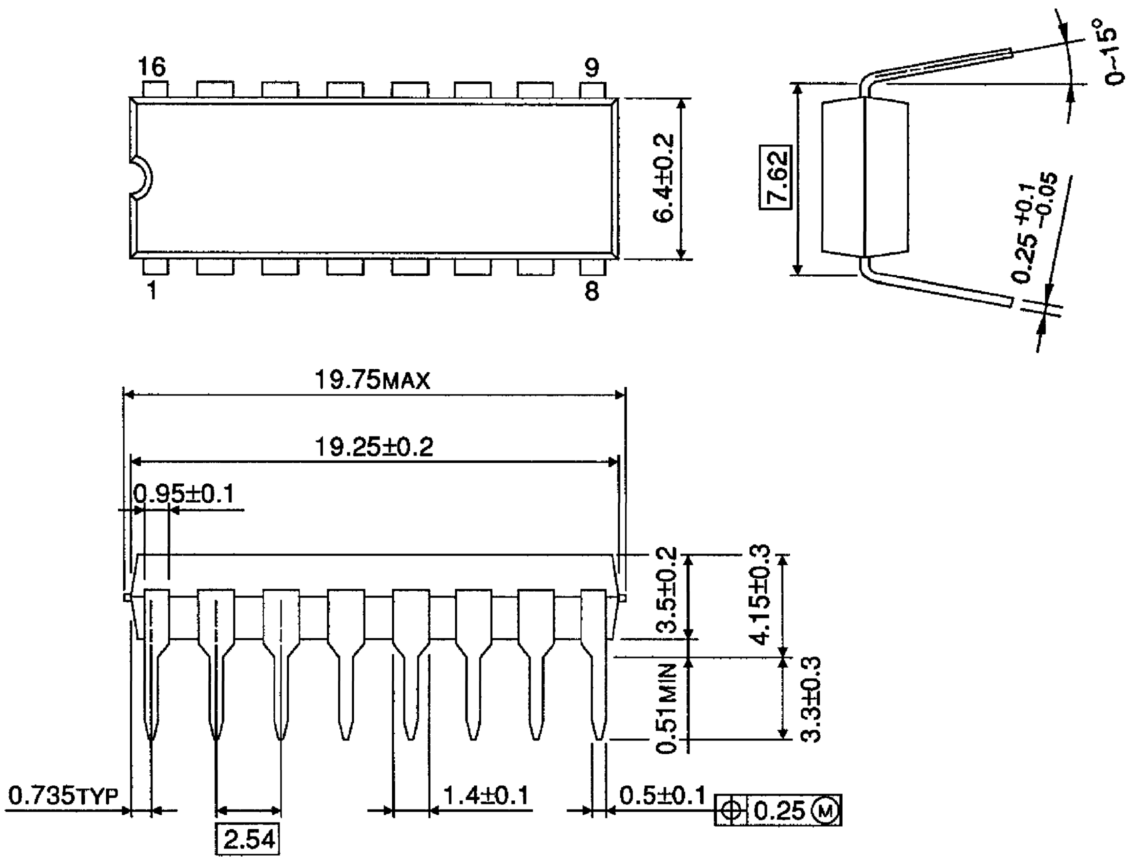

PD – Ta
POWER DISSIPATION PD (W)
3.0
2.4
1.8
1.2
0.6
0
0
40
80
120
160
200
240
① On PCB
50 × 50 × 1.6mm Cu 50%
② Free Air
Ta = 85°C
AMBIENT TEMPERATURE Ta (°C)


IOUT – DUTY CYCLE
OUTPUT CURRENT IOUT (mA)
1500
1200
900
600
300
0
0
20
40
60
80
100
120
n = 1
2
3
4
Ta = 25°C
n-ch ON
DUTY CYCLE (%)


IOUT – DUTY CYCLE
OUTPUT CURRENT IOUT (mA)
1500
1200
900
600
300
0
0
20
40
60
80
100
120
n = 1
2
3
4
Ta = 85°C
n-ch ON
DUTY CYCLE (%)

OUTLINE DRAWING

DIP16-P-300-2.54A Unit : mm



Weight : 1.11g (Typ.)